CAUSES OF PREMIUMS PAID FOR QUALITY WHEAT AT KANSAS CITY AND THE GROWTH OF THEIR INFLUENCE

by

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INTRODUCTION

A Problem Investigating the Causes of Premiums Being Paid for Quality Wheat

In recent years a premium has been paid for high quality wheat at Kansas City, and other markets. This premium varies in amount from year to year, depending upon several factors that are of importance to anyone interested in growing or marketing wheat.

Purpose

The purpose of this study is to determine causes of premiums being paid for quality wheat, as found by an analysis of some of the different influences that affect the wheat industry.

Such a study of wheat premiums and their causes will give information to the farmer, grain dealer and miller relative to the following questions:

(a) Size of intra-grade price spreads due to premiums paid for milling quality wheat.

(b) The effect of protein content of wheat upon the price received.

(c) Effect of size of Kansas crop upon size of premiums.

(d) Effect of the general price trend of wheat upon the size of the premiums for quality wheat.

(e) Tendency toward large premiums being paid in recent years.

(f) Factors causing the formation of high protein content in wheat.

(g) Effect of growth and concentration of the milling industry.

(h) Effect of growth of baking industry.

(i) Seasonal character of mill buying and its probable effects upon early season price advances.

Sources of Data

The price data for the thesis were obtained from quotations on the Kansas City Board of Trade for the years 1910-1927.

Average monthly prices for top and low No. 2 hard winter wheat were used as the basis of determining the spread or premium paid for each month.

Information on the growth and concentration of the milling industry was obtained from the Miller's Almanack and Yearbook for the years 1926 and 1927.

The "Grain Market Review" for the years included in the investigation was also used.

Circular 114, Kansas State Agricultural College, by L. E. Call, R. M. Green, and C. O. Swanson was used in the discussion of average protein content of wheat in counties in Central Kansas.

Table showing the growth and consolidation of the baking industry was obtained from the Department of Commerce Year Book for 1926, page 751. Quotations were also made from the technical bulletin, The Coming Hard Wheat Deficiency, by Carl L. Alsberg, Food Research Institute, Stanford University. Other less used references appear in the bibliography.

Method of Treatment

The method of treatment of this subject is both statistical and historical. The method of measuring price premiums for quality wheat was to obtain the difference between low and high No. 2 hard winter wheat, using the average daily prices for the years 1910 to 1927 inclusive.

These daily prices were averaged for both high and low hard winter wheat for each month and recorded in two tables.

The average monthly price for top No. 2 hard winter wheat was recorded in Table No. I. Likewise the average price for each month of low No. 2 hard winter wheat was recorded in Table No. II.

TABLE I

Average of Daily Cash Wheat Prices for Top No. 2 Hard, at Kansas City, Missouri
(Data from Kansas City Board of Trade)

	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19
July	107	90	101	86	84	140	114	261	224
Aug	103	96	91	86	96	133	145	264	217
Sept	103	99	89	90	106	110	159	216	216
Oct	99	108	90	89	104	111	174	216	217
Nov	98	103	85	88	106	107	188	216	216
Dec	98	102	86	89	115	113	175	216	225
Jan	100	106	94	89	136	123	191	216	233
Feb	92	106	89	89	156	124	183	216	228
Mar	94	107	88	90	149	110	201	216	239
April	91	109	90	90	154	117	261	216	262
May	94	113	90	91	151	113	306	216	262
June	91	111	92	93	124	104	278	216	250

	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	
July	237	277	135	133	103	134	163	141	
Aug	227	255	122	112	111	130	174	136	
Sept	233	251	126	111	120	133	167	137	
Oct	243	212	118	117	124	151	166	141	
Nov	256	179	113	120	120	155	169	139	
Dec	278	171	114	122	120	178	179	140	
Jan	284	174	119	120	122	198	183	139	
Feb	253	165	137	120	122	196	176	138	
Mar	261	157	144	120	121	183	165	136	
April	284	137	147	125	122	165	163	134	
May	300	150	149	122	119	175	157	148	
June	284	149	136	113	123	179	159	155	

TABLE II

Average of Daily Cash Wheat Prices for Bottom No. 2 Hard at Kansas City, Missouri
(Data from Kansas City Board of Trade)

	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19
July	101	85	94	82	76	127	108	254	221
Aug	98	90	88	82	90	116	138	248	215
Sept	97	95	87	85	103	104	151	208	215
Oct	93	102	87	83	103	105	166	208	216
Nov	90	99	82	82	107	101	182	208	216
Dec	91	99	83	83	114	106	169	208	224
Jan	94	104	86	84	136	118	187	208	232
Feb	88	101	85	86	153	118	179	208	227
Mar	87	105	85	87	147	104	196	208	238
April	86	107	87	88	153	110	252	208	261
May	89	111	87	89	150	107	296	208	261
June	87	109	87	86	119	98	266	208	247

	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	
July	225	270	115	107	93	113	150	134	
Aug	217	242	111	99	98	117	162	129	
Sept	220	242	118	100	104	120	153	130	
Oct	226	205	106	111	106	135	152	137	
Nov.	240	175	104	116	102	142	159	135	
Dec	257	168	106	114	102	158	169	136	
Jan	270	170	108	111	106	178	175	136	
Feb	241	160	124	112	107	177	169	134	
Mar	247	152	126	113	103	162	158	130	
April	273	131	127	118	99	145	157	128	
May	291	143	128	112	100	159	155	138	
June	278	138	112	102	101	154	155	140	

After recording these data another table was prepared showing the difference between high and low No. 2 hard winter wheat for each corresponding month. This difference in price between average high and low No. 2 hard winter wheat represents the average premium received for each month. This premium or "spread" represents the difference that was paid for wheat of the same class and grade. It is based largely on the amount of protein that the wheat contained as determined by chemical analysis.

This "spread" varies considerably from day to day, depending somewhat upon the demand for high quality milling wheat by millers, exporters and other dealers in grain. Table No. III shows spreads for each month studied.

To eliminate the effect of different price levels during the years studied the premiums were computed on the percentage basis using low No. 2 prices as the base in each case.

Table No. IV shows the premiums determined upon the percentage basis thereby tending to eliminate differences in price levels.

As these figures show quite a large variation from year to year the above figures were divided into two groups, depending upon the size of the premiums in each instance.

To make the groups of approximately the same size, group 1 contained the figures from 0-4.99 per cent or the

TABLE III

Spread Between Average Daily Cash Wheat Prices for Top No. 2 Hard at Kansas City, Missouri

	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19
July	.06	.05	.07	.04	.06	.13	.06	.07	.03
Aug	.05	.06	.03	.04	.06	.17	.07	.06	.02
Sept	.06	.04	.02	.05	.03	.06	.09	.08	.01
Oct	.06	.06	.03	.06	.01	.06	.08	.08	.01
Nov.	.08	.04	.03	.06	.01	.06	.06	.08	.00
Dec	.07	.03	.03	.06	.01	.05	.06	.08	.01
Jan	.06	.02	.08	.05	.01	.05	.04	.08	.01
Feb	.04	.05	.04	.03	.03	.06	.04	.08	.01
Mar	.07	.02	.03	.03	.02	.06	.05	.08	.01
April	.05	.02	.03	.05	.01	.07	.09	.08	.01
May	.05	.02	.03	.02	.01	.06	.10	.08	.01
June	.04	.02	.05	.07	.05	.05	.12	.08	.03

	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27
July	.13	.07	.18	.26	.10	.21	.13	.07
Aug	.10	.13	.11	.15	.03	.13	.12	.07
Sept	.13	.09	.10	.11	.16	.13	.14	.07
Oct	.17	.07	.12	.06	.18	.16	.14	.04
Nov	.18	.04	.09	.04	.18	.13	.10	.03
Dec	.21	.03	.03	.08	.18	.17	.10	.04
Jan	.14	.04	.11	.09	.06	.20	.08	.03
Feb	.12	.05	.13	.08	.05	.18	.07	.04
Mar	.14	.05	.18	.07	.08	.21	.07	.06
April	.11	.06	.20	.07	.23	.20	.06	.06
May	.09	.07	.21	.10	.19	.16	.02	.10
June	.06	.11	.24	.11	.22	.25	.04	.15

TABLE IV

Percentage of Spread Between Top and Bottom Cash Price No. 2 Hard Winter Wheat, Kansas City, Missouri

	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19
July	5.9	5.9	7.4	4.9	10.5	10.2	5.5	2.8	1.4
Aug	5.1	6.6	3.4	4.9	6.6	14.7	5.1	2.4	.9
Sept	6.2	4.2	2.3	5.9	2.9	5.8	5.3	3.8	.5
Oct	6.5	5.9	3.4	7.2	1.0	5.7	4.8	3.8	.5
Nov	8.8	4.0	3.6	7.3	.9	5.9	3.3	3.8	.0
Dec	7.7	3.0	3.6	7.2	.9	4.6	3.6	3.8	.4
Jan	6.4	1.9	9.3	6.0	.7	4.2	2.1	3.8	.4
Feb	4.5	4.9	4.7	3.5	2.0	5.1	2.2	3.8	.4
Mar	8.0	1.9	3.5	3.4	1.4	5.3	2.6	3.8	.4
April	5.8	1.9	3.4	5.9	.7	6.4	3.6	3.8	.4
May	5.6	1.8	3.4	2.2	.7	5.6	3.4	3.8	.4
June	4.6	1.8	5.7	8.1	4.2	5.1	4.5	3.8	1.2

	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27
July	5.8	2.6	15.7	24.2	10.8	16.6	8.7	5.2
Aug	4.6	5.4	9.9	13.1	5.1	11.1	7.4	5.4
Sept	5.9	3.7	8.5	11.0	15.4	10.8	9.2	5.4
Oct	7.5	3.4	11.3	5.4	17.0	11.9	9.2	2.9
Nov	7.5	2.3	8.7	3.4	17.6	9.2	6.3	2.2
Dec	8.2	1.8	7.5	7.0	17.6	10.8	5.9	2.9
Jan	5.2	2.3	10.2	8.1	5.7	11.2	4.6	2.2
Feb	5.0	3.1	10.5	7.1	4.7	10.2	4.1	3.0
Mar	5.7	3.3	14.3	6.1	7.8	13.0	4.4	4.6
April	4.0	4.6	15.7	5.9	23.2	13.8	3.8	4.7
May	3.1	4.9	16.4	8.9	19.0	10.1	1.3	7.2
June	2.8	8.0	21.4	10.8	21.8	16.2	2.6	10.7

months in the years when the premium was smallest. This group will be referred to later as the group having the smaller per cent premiums.

These figures are recorded in Table V.

The second group, or those having a percentage spread from 5 to 28 per cent are recorded in Table VI

The remainder of the thesis is based largely upon these two groups of figures recorded in Tables V and VI with the intention of explaining some influences which are at work and also the growth of their influence in recent years.

YEARS OF SMALL PERCENTAGE PREMIUMS AND YEARS OF LARGE PERCENTAGE PREMIUMS

A study of these two groups shows some interesting facts. Prior to 1918-1919 it is found that there are six years in which the premiums are small, that is, less than 5 per cent. During the same period of years before 1918-1919 only three years show the majority of monthly premiums to be more than 5 per cent.

From 1910-1919 the premiums for quality wheat were much lower than they were on the average for many of the following years.

During the early years studied wheat was not sold on the basis of its protein content but was judged largely by its test weight per bushel, its color and texture, and the

TABLE V

Months Having Smallest Per Cent of Premiums. 0-4.97 Per Cent

	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19
July								2.8	1.4
Aug			3.4	4.9				2.4	.9
Sept		4.2	2.3		2.9			3.8	.5
Oct			3.4		1.0		4.8	3.8	.5
Nov		4.0	3.6		.9		3.3	3.8	.0
Dec.		3.0	3.6		.9	4.6	3.6	3.8	.4
Jan		1.9			.7	4.2	2.1	3.8	.4
Feb	4.5	4.9	4.7	3.5	2.0		2.2	3.8	.4
Mar		1.9	3.8	3.4	1.4		2.6	3.8	.4
April		1.9	3.4		.7		3.6	3.8	.4
May		1.8	3.4	2.2	.7		3.4	3.8	.4
June	4.6	1.8			4.2		4.5	3.8	1.2

	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	
July		2.6							
Aug	4.6				3.1				
Sept		3.7							
Oct		3.4						2.9	
Nov		2.3		3.4				2.2	
Dec		1.8						2.9	
Jan		2.3					4.6	2.2	
Feb		3.1			4.7		4.1	3.0	
Mar		3.3					4.4	4.6	
April	4.0	4.6					3.8	4.7	
May	3.1	4.9					1.3		
June	2.2						2.6		

TABLE VI

Months Having Largest Per Cent of Premiums. 5-25.00 Per Cent

	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19
July	5.9	5.9	7.4		10.5	10.2	5.5		
Aug	5.1	6.6			6.6	14.7	5.1		
Sept	6.2			5.9		5.8	5.3		
Oct	6.5	5.9		7.2		5.7			
Nov	8.8			7.3		5.9			
Dec	7.7			7.2					
Jan	6.4		9.3	6.0					
Feb						5.1			
Mar	8.0					5.8			
April	5.8					6.4			
May	5.6			5.9		5.6			
June			5.7	8.1		5.1			

	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	
July	5.8		15.7	24.2	10.8	18.6	8.7	5.2	
Aug		5.4	9.9	15.1		11.1	7.4	5.4	
Sept	5.9		8.5	11.0	15.4	10.8	9.2	5.4	
Oct	7.5		11.3	5.4	17.0	11.9	9.2		
Nov	7.5		8.7		17.6	9.2	6.3		
Dec	8.2		7.5	7.0	17.6	10.8	5.9		
Jan	5.2		10.2	8.1	5.7	11.2			
Feb	5.0		10.6	7.1		10.2			
Mar	5.7		14.3	6.1	7.8	13.0			
April			15.7	5.9	23.2	13.8			
May			16.4	8.9	19.0	10.1		7.2	
June		8.0	21.4	10.8	21.8	16.2		10.7	

class to which it belonged.

However, since 1919 there have been only three years when the premiums were less than 5 per cent, while there have been six years since 1919 when the premiums varied from 5 to 23 per cent or were classified as high premium years. During the year 1925-26 six months showed low premiums and six months high premiums, although 1925-26 has been classed in this study as a small premium year. The last part of 1927 also showed large premiums were paid for quality wheat.

Since 1917 wheat has been sold on the basis of its protein content as determined by chemical analysis, and the tendency has been for large premiums to be paid on the average.

CORRELATION OF SIZE OF KANSAS CROP WITH SIZE OF PREMIUM

Little or No Correlation

A study of the size of the Kansas crop and the size of the premium paid was made with the intention of correlating the effect of large or small Kansas crops on the size of the premium paid. The production for Kansas for each year studied, was obtained from the reports of the Kansas State Board of Agriculture. The production in Kansas varied during the years studied from 42 million bushels in 1917-18 to 181 million bushels in 1914-15.

This investigation was made to determine whether the premiums tended to be large during years of small Kansas crops and if they were small during years of large production.

However, the size of the production alone during any year did not seem to have any important bearing upon the size of the premium paid. For example in the years 1911-12 and 1917-18 when the Kansas crop was 51,000,000 and 42,000,000 bushels respectively, we find the premiums grouped in the table showing the smallest percentage premiums.

On the other hand it was found that during years of high production, of from 100 to 154 million bushels, the premiums were large. This would seem to indicate that there is little or no important correlation between the size of the Kansas crop and the size of the premiums received at Kansas City.

Tendency Toward Large Premiums Greatest in Recent Years

There seems, however, to be a tendency towards larger premiums being paid more often, since 1919, than prior to that year. This seems to indicate that other causes than size of crop are responsible for the tendency for premiums to be large in recent years. The same tendency is shown by a study of the secular trend lines of monthly high and low

prices for No. 2 hard winter wheat at Kansas City since 1892.

Size of Premium Paid for Quality in Relation to General Trend of Wheat Prices

The size of the price premium for quality wheat is not dependent upon the general trend of wheat prices. (See Table VII). Large premiums are associated about one-half the time with years of declining prices and about one-half the time with years of advancing prices.

Likewise small premiums are found in years of advancing price tendencies as frequently as in years of declining prices.

TABLE VII

The Relation of the Size of the Premium Paid for Quality Wheat and the General Trend of Wheat Prices. (Kansas City Prices)

	Number of Years	General Trend of Wheat Prices		
		Up	Down	Stationary
No. 2 hard wheat premium of 5 per cent or more	9	4	4	1
No. 2 hard wheat premium of less than 5 per cent	9	4	4	1

HISTORICAL DEVELOPMENTS MAKING FOR LARGE PRICE PREMIUMS ON HIGH QUALITY WHEAT IN RECENT YEARS, 1919-20 TO 1927-28

Growth and Concentration in the Milling Industry Has Marked Recent Years

A study of the milling industry as reported in the Millers Almanack and Yearbooks for 1926 and 1927 shows that from the year 1910 to 1927 there has been a gradual reduction in the number of mills grinding wheat in Kansas, with the exceptions of the years 1918, 1920 and 1921.

In 1910 there were 211 mills in Kansas with a total consumption of 46 million bushels of wheat. These mills were well distributed in different sections of the wheat area. During the next seven years we find the number of mills reduced to 156 but at the same time with a consumption of 55 million bushels of wheat, showing a loss of 55 mills during this period.

During the next four years, from 1918 to 1921, the war period, the number of mills shows an increase but not in proportion to the number of bushels of wheat consumed. The increase in the number of mills at this time was probably due to better prices and temporary profitableness of smaller mills. The better prices received for flour after the war brought into operation some of the marginal mills.

After the year 1921 we again find the number of mills

greatly reduced in number, the reduction being from 205 mills in 1920 to 113 mills in 1927. At the same time there is an increase from 72 million bushels of wheat ground in 1920 to 79 million bushels in 1927. This shows a decrease of 92 mills during the period from 1920 to 1927 and at the same time an increase of 24 million bushels of wheat consumed. Thus, with fewer mills in operation, and with a larger consumption of wheat, it shows a substantial concentration of the milling industry in Kansas.

At the present time there is only one state in the United States which leads Kansas in the production of flour, and that state is Minnesota. Minnesota and Kansas together ground one-third of the wheat consumed by mills during 1927. Minnesota, with even fewer mills than Kansas, ground 96 million bushels of wheat last year with 76 mills in operation instead of 246 mills as in 1918 and 1919 when consumption of wheat was 53 million bushels.

Therefore, the mills of both Kansas and Minnesota show similar concentration in the industry in recent years.

At the same time good milling wheat from Kansas averaged 17 pounds of offal to a barrel of flour, while Minnesota wheat averaged 17.6 pounds of offal to each barrel of flour during 1927. It requires less wheat in Kansas to make a barrel of flour than in Minnesota.

The average for last year, 1927, in Kansas was 275.4 pounds of wheat to each barrel of flour produced, while it required 277.1 pounds of wheat for each barrel of flour produced in Minnesota.

Thus the miller in Kansas enjoys a decided advantage over his nearest competitor.

These advantages should enable Kansas millers to pay a higher premium for Kansas wheat than the millers in Minnesota and still be able to compete favorably with flour prices from other states.

In a report on wheat studies by the Food Research Institute, Vol. IV, No. 1, page 34, November, 1927, is found the following:

"We find the past year was the best season enjoyed by American millers since the war. Millers were early in position to make large purchases of unusually good wheat at relatively favorable prices.

The total grinding of the year was 565 million bushels, an excess of 12 million bushels over the previous year. An unusual proportion of the annual flour production was sold and ground during the first three months of the year.

All regions did not share equally in the large outturn. The mills of the Southwestern region enjoyed a remarkable year. Flour mills in Kansas City, Missouri, Kansas, Nebras-

ka, and Oklahoma turned out nearly 31 million barrels of flour. This was an outstanding record for this region."

Growth and Concentration in the Baking Industry

The baking industry shows a growth and concentration in recent years similar to that in the milling industry.

In an article in the Millers Almanack and Yearbook for 1926, page 322, bakery consolidations are discussed:

"Although baking has been called a billion dollar industry since 1919 there is little doubt that the greatest progress it has ever made in so far as an increase in capital is concerned, was that made in 1925. Last year might almost be known in the baking world as the year of mergers and it would seem that this tendency would continue in 1926".

Table VIII on page 19 of this thesis further illustrates the growth and concentration of the baking industries in the United States.

This shows the number of establishments has decreased 8,277 from 1914 to 1925 while the value added by manufacture has increased $382,542,000.

A change in recent years has taken place in the amount of home baking of light bread. Until recently two-thirds of the bread used was baked at home but now about one-third is baked at home and the other two-thirds is baked by bakeries.

TABLE VIII

Bread and Other Bakery Products
(From Department of Commerce Yearbook, 1926, Page 751)

Year	Number of Establishments	Cost of Materials	Value of Products (000 Omitted)	Value Added by Manufacture
1925	17,684	$668,000,000	$1,268,194	$600,178,000
1923	18,730	574,520,000	1,122,906	548,386,000
1921	20,173	598,614,000	1,089,972	491,358,000
1919	25,095	715,259,000	1,151,896	438,657,000
1914	25,961	274,257,000	491,893	217,636,000

For bakeries to make good bread requires a flour made from strong wheat. Strong wheat is a term used to indicate that the flour will make a well shaped light loaf of bread of good color and texture. With the large mechanical mixers now in use, it is necessary to have flour that has quality in order to stand up under the high speed mixing machinery used.

Possibilities of Shortage of High Protein Wheat
(Carl L. Alsberg, Food Research Institute,
Stanford University)

A quotation from the bulletin, "The Coming Hard Wheat Deficiency," by Mr. Alsberg, states:

"Judging by the complaint of the press and in particular the agricultural press, one is led to believe that the

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wheat farmer is suffering from overproduction. This is, of course, true for wheat in general, but it is not equally true of the various kinds of wheat produced in our country. As a matter of fact, there is far from overproduction of certain kinds of wheat, wheat of high gluten content."

High quality wheat at present is largely the result of several factors, such as the variety sown, the climate, and the soil upon which it is grown.

Kansas is fortunate in having a section of the state in which the climatic and soil factors are very favorable for the frequent production of high quality wheat. The West Central portion of Kansas or a group of seventeen counties show that the wheat raised there, from 1917 to 1924, averaged very high in protein content.

According to Table III in Kansas Circular 114, by L. E. Call, R. M. Green, and C. O. Swanson, these counties had the following average protein content of wheat:

TABLE IX

Year	Per Cent Protein	
1917-18	11.8	Low
1918-19	13.6	High
1919-20	12.6	Average
1920-21	13.0	High
1921-22	12.0	Low
1922-23	12.0	Low
1923-24	12.4	Average

Therefore, wheat shipped from these counties commands a premium over wheat that is grown in the more humid sections of the state. Flour made from high quality wheat has a greater water absorptive power than low protein wheats. This is a distinct advantage to bakers because they are able to produce a larger loaf of bread from a given amount of flour.

The result is that many millers no longer buy wheat merely on grade and appearance, but insist upon knowing the protein content of the wheat also. At the present time most trading in wheat is done after the sample has been inspected, graded and an analysis made of its protein content. Because of this system of buying the producer of high quality wheat is entitled to the increased value of the wheat due to its quality.

Seasonal Character of Domestic Mill Buying at Kansas City

Table X,(included in this thesis as page 22), shows the per cent of top No. 2 hard winter wheat purchased by mills for the years 1915 to 1925 at Kansas City.

A careful study of this table shows that on the average the mills purchase the largest per cent of their wheat early in the season or during the months of July, August, September, and October.

For the period of years studied they purchased on an

TABLE X

Per Cent of Wheat Purchased by Mills of Kansas for Years 1915-1925. Top No. 2 Hard

	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	Average
July	4.5	12.5	6.5	18.2	10.5	9.5	15.2	9.7	14.2	15.2	11.60
August	7.0	13.5	8.0	17.0	16.5	10.5	16.2	15.2	16.5	15.8	13.60
September	7.9	15.1	8.5	13.0	12.5	9.0	13.5	11.5	8.3	13.2	11.30
October	8.0	13.0	14.5	9.5	9.8	10.0	8.0	10.5	9.0	10.5	10.28
November	15.0	9.8	16.0	7.0	8.5	8.5	6.2	8.5	8.0	8.0	9.55
December	13.0	8.8	9.0	6.5	10.2	6.2	6.2	11.0	8.2	7.2	8.43
January	7.7	7.7	8.0	4.5	8.7	7.7	6.8	7.0	6.2	7.5	7.13
February	6.8	6.0	6.5	5.2	5.2	6.5	7.0	6.5	7.7	6.0	6.34
March	6.1	6.5	7.5	7.7	4.0	7.0	5.0	5.5	4.5	4.0	5.78
April	7.0	4.8	6.0	5.2	4.2	7.2	4.5	5.5	4.8	2.5	4.77
May	9.9	5.0	4.2	5.2	5.2	7.2	4.7	4.5	6.2	4.0	5.21
June	5.0	1.2	2.5	1.5	4.0	9.8	4.5	4.0	5.5	6.2	4.42

average of 11.6 per cent of their wheat during July, 13.6 per cent in August, and 11.50 per cent during September, and 10.28 per cent during October.

In eight of the ten years studied these months show a much larger per cent of purchases than during any other months in the year.

The only exceptions to this are during November and December, 1915, when they purchased 28 per cent of the total during these months. In the other year, 1917-18, the largest purchases were made during October and November at which time they purchased 30.5 per cent of their wheat. On the average their purchases gradually decrease from October until the following June, decreasing in per cent purchased, 10.28 in October, to 9.55 in November, 8.43 per cent in December, 7.18 per cent in January, to 6.34 per cent in February, to 5.78 per cent in March, down to 4.77 per cent in April, with a slight increase in May to 5.21 per cent and down to 4.42 per cent in June, the lowest point during the entire year.

From the above figures it would seem that the millers are anxious to purchase their milling wheat soon after harvest. At the same time the table previously studied, showing the years having the largest per cent premiums, shows some interesting facts. As a rule the months showing the highest per cent purchases also show some of the highest

premiums paid during the entire year.

The millers seem to realize that there is only a certain amount of the best quality wheat on the market and to obtain their supply for milling it is necessary for them to purchase their wheat soon after harvest. Under the present system of marketing wheat in Kansas, much of the supply is rushed to market as soon as possible after threshing. Unless the wheat is in poor condition this seems to be the best time to store up a supply of good quality wheat for later milling even though a premium must be paid.

This controls the movement to a certain extent, of the best wheat and prevents it from entering the export market.

Tendency for Higher Prices the Second 10-Day Period in July.

Another indication that the millers are in the market earlier in recent years (1919-1927) than they were between the years 1910-1918, is shown in Table XI on page 25.

The second week in July was used for the comparison because by that time the new movement of wheat has begun and the millers are making purchases of wheat.

During the years 1910-1918 there are five years when the second ten-day period in July showed a price increase over the first ten-day period in July. At the same time four years showed the prices to be lower the second ten-day peri-

TABLE XI

Top Daily Prices of Cash No. 2 Hard Winter Wheat(Kansas City Board of Trade)

(Number of Times the Second Ten Days of July Has Been Up)

Small Average Premiums 1910-1918		Large Average Premiums 1919-1927	
Up	Down	Up	Down
1910-11	1911-12	1920-21	1919-20(Even)
1915-16	1912-13	1921-22	1923-24
1916-17	1913-14	1922-23	
1917-18	1914-15	1924-25	
1918-19		1925-26	
		1926-27	
		1927-28	
5 Years	4 Years	7 Years	2 Years

ed than they were the first ten days of July. This period of years, 1910-18, considered low premium years in our study, shows practically the same situation. That is, out of the nine years included, 5 years showed an advance the second ten days of the month and four years did not show an advance.

However, since 1919-1927 a different result is obtained, because six years showed an advance in price during the second ten-day periods and one year was not changed, while only one year showed a decline the second ten-day period over the first ten-day period. This seems significant and seems to indicate the recent influence of early purchase of a supply of wheat by the millers when good quality wheat is available.

An average protein content of less than 12.5 per cent for wheat in the main wheat producing counties of Kansas most frequently means a premium of 5 per cent or more on top No. 2 hard winter wheat as compared with low No. 2 hard winter wheat.

CONCLUSIONS AND SUMMARY

A study of the causes of premiums indicates that there were six years prior to 1919 when the premiums were low or less than 5 per cent, and three years when the premiums were high or more than 5 per cent on the average.

There were six years since 1919 when the premiums ranged from 5 to 23 per cent and three years when they were less than 5 per cent on the average.

The tendency has been for large premiums to occur more frequently in recent years or since 1919 than they did prior to 1919.

There was little or no important correlation between the size of the Kansas wheat crop and the size of the premiums received.

The price of wheat the second ten-day period in July has been higher than the first ten-day period seven times out of nine, less once and even once, during the year 1919-1927.

Size of price premium for quality wheat is not depend-

ent upon the general trend of wheat prices. Large premiums are associated about one-half the time with years of declining prices and about one-half the time with years of advancing prices. Likewise small premiums are found in years of advancing prices as frequently as in years of declining prices.

Growth and concentration of the milling industry has taken place in recent years, from 1919-1920 to 1926-1927, in the southwestern wheat area, causing an increased demand for quality wheat.

Development and concentration has also occurred in the baking industry, giving rise to higher premiums for quality wheat.

The bakers demand for quality wheat may produce a shortage of high protein wheat.

Millers on an average make large purchases of quality wheat soon after harvest, that is, during July, August, September, and October.

Years of exceptional premium trend; low premium years since 1919:

1920-1921 - Kansas crop of 141 million bushels with high average protein content of 13 per cent, 74.6 per cent of the crop graded No. 1 and No. 2.

1925-1926 - Kansas crop of only 76 million bushels but high protein analysis. Six months had premiums less than

5 per cent and six months the premiums were more than 5 per cent on the average. This crop also had a high test weight per bushel.

1926-1927 - Kansas crop of 150 million bushels of wheat. Seven months of the year the premium was below 5 per cent and five months of the year the premium averaged more than 5 per cent.

An average protein content of less than 12.5 per cent for wheat in the main wheat producing counties of Kansas, most frequently means a premium of 5 per cent or more on top No. 2 hard winter wheat as compared with low No. 2 hard winter wheat.

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LITERATURE CITED

Alsberg, Carl L.
1924. The Coming Hard Wheat Deficiency, Reprint from Baking Technology, Vol. III, No. 2, Stanford University.

Annual Statistical Report.
1927. Kansas City Board of Trade, Kansas City, Mo.

Call, L. E., Green, R. M., Swanson, C. O.
1925. How to Grow and Market High Protein Wheat. Circular 114, K. S. A. C., Manhattan, Kansas.

Department of Commerce Yearbook.
1926. Baking Industry, Page 751, Department of Commerce, Washington, D. C.

Green, R. M., and Stokdyk, E. A.
1927. Judging Price Risks in Marketing Wheat. Extension Circular No. 54, K. S. A. C., Manhattan, Kansas.

Lyons, F. L.
1907. The Relation of Wheat to Climate and Soil. Cornell University, Ithaca, N. Y., Proceedings Am. Soc. of Agronomy, Vol. I, pp. 108-125.

Shaw, G. W.
1913. Studies Upon Influences Affecting the Protein Content of Wheat. Proceedings Am. Society of Agronomy.

Thatcher, R. W.
1909. Factors Which Determine the Composition of Wheat, Proc. Am. Soc. of Agronomy, Vol. I, pp. 108-125.

The Northwestern Miller.
1926-1927. The Millers Almanack and Year Book. Minneapolis, Minn.

Wheat and Rye Statistics.
1926. United States Department of Agriculture, Washington, D. C. Statistical Bulletin No. 12.

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